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Intellectual Property

10/532647

JC2004 PCT/PTO 25 APR 2005  
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Rebecca Tanis  
WesternGeco Intellectual Property Dept  
PO Box 2469  
Houston  
TX 77252-2469  
USA

your ref 14.0209-PCT  
our ref AMS.P52427WO  
date 22 April 2004

RECEIVED

MAY 03 2004

MIS/00103104

IPW

Dear Rebecca

**PCT Application PCT/EP 03/50871**  
**WesternGeco Seismic Holdings Limited et al**  
**"Implementing a Network Infrastructure in a Seismic Acquisition System"**

**Search Report**

The European Patent Office has issued the International Search Report on the above application, and a copy is enclosed. Copies of the five documents cited in the Search Report are also enclosed.

The first two documents have been cited in "Category X" against claims 1, 2, 4 and 6-12. This indicates that the Search Examiner considers that they can be used to attack the novelty and inventive step of these claims.

The other three documents have been cited only in "Category A" as indicating the technological background to the invention. This indicates that the Search Examiner considers that these documents are not of particular relevance to the invention as currently claimed.

If you would like me to review the cited documents and comment on their relevance, please let me know.

**BEST AVAILABLE COPY**

**Partners**  
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K Whalley, UK, CHA, EP  
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A M Suckling, UK, CHA, EP  
R A Bailey, UK, CHA, EP  
D C Stagg, UK, CHA, EP  
J D Collins, UK, CHA, EP

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F A Melling, UK, CHA, EP  
R Lind, UK, CHA, EP  
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R J Gienke, UK, CHA, EP  
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S M McCausland, UK, CHA, EP  
R Ballester, UK, CHA, EP

**Further Prosecution**

This application should be published on or soon after 22 May 2004. We shall advise you of the publication of the application in due course.

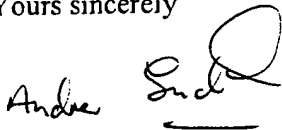
Please would you let me know whether you would like to file a Demand for International Preliminary Examination of this application. The nineteen-month deadline for filing a Demand is 22 June 2004.

If a Demand is filed, the thirty-month deadline for entry into the national phase will be 22 May 2005. If a Demand is not filed by the nineteen-month deadline, the deadline for entry into the national phase will be 22 July 2004 in any countries that have not yet adopted the new Chapter I deadline (although I believe that all of the countries of interest to you have now adopted the new Chapter I deadline).

It is now possible to file amendments to the claims of this application. Please let me know if you would like to file any amendments at this time.

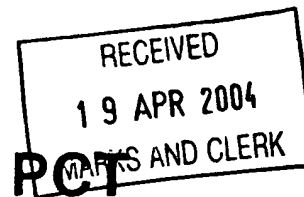
I look forward to receiving your further instructions concerning this application in due course, but please let me know if you have any questions concerning this application. Our debit note is being sent to WesternGeco AS.

Yours sincerely



**Dr Andrew Suckling**  
for Marks & Clerk

# PATENT COOPERATION TREATY



From the INTERNATIONAL SEARCHING AUTHORITY

To:  
**MARKS & CLERK**  
 Attn. Suckling, Andrew  
 4220 Nash Court  
 Oxford Business Park South  
 Oxford, Oxfordshire OX4 2RU  
 UNITED KINGDOM

NOTIFICATION OF TRANSMITTAL OF  
 THE INTERNATIONAL SEARCH REPORT  
 OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference <b>AMS . P52427WO</b>	Date of mailing (day/month/year) <b>20/04/2004</b>
International application No. <b>PCT/EP 03/50871</b>	International filing date (day/month/year) <b>21/11/2003</b>
Applicant <b>WESTERNGECO SEISMIC HOLDINGS LIMITED</b>	

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.  
**Filing of amendments and statement under Article 19:**  
 The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):  
  
**When?** The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.  
  
**Where?** Directly to the International Bureau of WIPO  
 34, chemin des Colombettes  
 1211 Geneva 20, Switzerland  
 Facsimile No.: (41-22) 740.14.35  
  
**For more detailed instructions, see the notes on the accompanying sheet.**
2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.
3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
 

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.  
  
☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.
4. **Further action(s):** The applicant is reminded of the following:  
  
 Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.  
  
 Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).  
  
 Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer:  <b>Ka-Bo Chan</b>
--	--

## NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

### INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

#### What parts of the International application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

#### When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

#### Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

#### How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

#### What documents must/may accompany the amendments?

##### Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

## NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:  
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:  
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:  
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or  
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:  
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

### "Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

### Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

### Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>AMS . P52427WO</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/EP 03/50871</b>	International filing date (day/month/year) <b>21/11/2003</b>	(Earliest) Priority Date (day/month/year) <b>22/11/2002</b>
Applicant <b>WESTERNGECO SEISMIC HOLDINGS LIMITED</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☒ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

3  
☐ None of the figures.

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/50871

CLASSIFICATION OF SUBJECT MATTER  
C 7 G01V1/22

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01V

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 459 654 B1 (GUION MICHEL ET AL) 1 October 2002 (2002-10-01) column 2, line 37 - line 61 column 3, line 53 - column 4, line 13 column 5, line 11 - line 18 column 5, line 26 - line 53 column 5, line 58 - line 65 column 6, line 33 - line 36 column 6, line 56 - line 61 column 7, line 26 - line 32 figure 1 --- -/--	1,2,4, 6-12

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*8\* document member of the same patent family

Date of the actual completion of the international search

5 April 2004

Date of mailing of the international search report

20/04/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax: (+31-70) 340-3016

Authorized officer

Schneiderbauer, K

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/50871

(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 337 636 B1 (ZHENG HONG HELENA ET AL) 8 January 2002 (2002-01-08) column 4, line 24 - line 45 column 5, line 7 - line 21 column 5, line 42 - line 60 column 6, line 55 - line 57 claim 8 figures 1,2 ---	1,2,4, 6-12
A	EP 1 004 900 A (INPUT OUTPUT INC) 31 May 2000 (2000-05-31) column 1, line 32 - line 42 column 4, line 21 - line 49 column 11, line 10 - line 44 column 13, line 6 - line 8 figures 2,5,5A,6 ---	1-25
A	WO 98 07049 A (PETROLEUM GEO SERVICES US INC ;FROMYR EIVIND (US)) 19 February 1998 (1998-02-19) page 6, line 6 - line 14 page 6, line 25 - line 28 page 8, line 13 - line 25 figures 3A,6 ---	1-25
A	US 5 627 798 A (SIEMS LEE E ET AL) 6 May 1997 (1997-05-06) column 4, line 51 - column 5, line 21 claim 1; figure 1 -----	1-25



# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 03/50871

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6459654	B1	01-10-2002	FR 2799004 A1	30-03-2001
			CA 2321151 A1	27-03-2001
			CN 1296189 A	23-05-2001
			DE 60006762 D1	08-01-2004
			EP 1087240 A1	28-03-2001
			JP 2001168882 A	22-06-2001
			NO 20004828 A	28-03-2001
-----				
US 6337636	B1	08-01-2002	NONE	
-----				
EP 1004900	A	31-05-2000	US 6041283 A	21-03-2000
			CA 2281855 A1	11-03-2000
			EP 1004900 A2	31-05-2000
			JP 2000147131 A	26-05-2000
			NO 994424 A	13-03-2000
-----				
WO 9807049	A	19-02-1998	AU 4066197 A	06-03-1998
			WO 9807049 A2	19-02-1998
-----				
US 5627798	A	06-05-1997	NONE	
-----				

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
31.05.2000 Bulletin 2000/22

(51) Int Cl.7: G01V 1/22

(21) Application number: 99307208.1

(22) Date of filing: 13.09.1999

(84) Designated Contracting States:  
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE  
Designated Extension States:  
AL LT LV MK RO SI

- Iseli, James W.  
Allen, Texas 75002 (US)
- Szalay, Jozsef  
Austin, Texas 78759 (US)
- Haide, Janos  
Austin, Texas 78759 (US)
- Feszthammer, Andras A.  
Austin, Texas 78759 (US)

(30) Priority: 11.09.1998 US 151260

(71) Applicant: Input/Output, Inc.  
Stafford, Texas 77477 (US)

(74) Representative: Giles, Ashley Simon et al  
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(72) Inventors:  
• Sigmar, Axel M.  
Sugar Land, Texas 77478 (US)

(54) **Remote control system for seismic acquisition**

(57) A system for remotely controlling and monitoring the acquisition of seismic data. The system includes remote equipment for collecting seismic data and for transmitting and receiving communication signals to

and from a remote location. The system also includes local equipment for transmitting and receiving communication signals to and from the remote location. In this manner, the collection of seismic data at remote locations can be controlled and monitored locally.

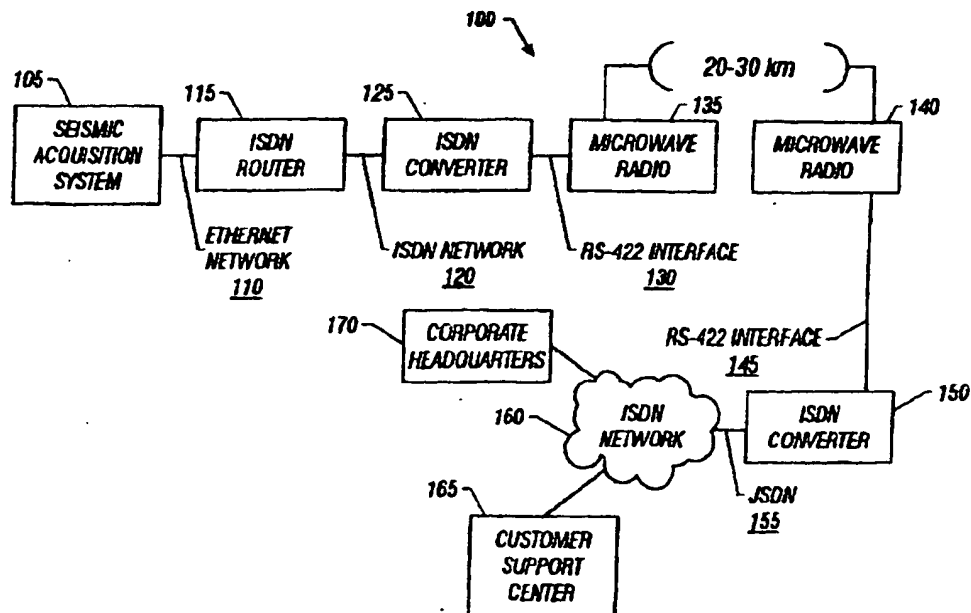


FIG. 1

EP 1 004 900 A2



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>G01V</b>	<b>A2</b>	(11) International Publication Number: <b>WO 98/07049</b> (43) International Publication Date: 19 February 1998 (19.02.98)
--	-----------	---

(21) International Application Number: PCT/US97/14282

(22) International Filing Date: 12 August 1997 (12.08.97)

(30) Priority Data:  
08/695,921 12 August 1996 (12.08.96) US

(60) Parent Application or Grant

(63) Related by Continuation  
US 08/695,921 (CON)  
Filed on 12 August 1996 (12.08.96)(71) Applicant (for all designated States except US): PETROLEUM  
GEO-SERVICES (US), INC. [US/US]; Suite 600, 16010  
Barker's Point Lane, Houston, TX 77079 (US).(71)(72) Applicant and Inventor: FROMYR, Eivind [-/US]; Suite  
600, 16010 Barker's Point Lane, Houston, TX 77079 (US).(74) Agent: ARNOLD, Gordon, T.; Arnold & Associates, Suite 800,  
2603 Augusta, Houston, TX 77057 (US).(81) Designated States: AU, BY, DK, GB, KZ, MX, NO, RU, SE,  
UA, US, Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU,  
TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI,  
FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent  
(BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD,  
TG).**Published***Without international search report and to be republished  
upon receipt of that report.*

(54) Title: RESERVOIR ACQUISITION SYSTEM WITH CONCENTRATOR

## (57) Abstract

A process comprising: transmitting remote data signals independently from each node of the plurality of permanently coupled remote sensor nodes to a concentrator of the data signals; and transmitting concentrated data signals from the concentrator to a recorder. A reservoir monitoring system comprising: a plurality of permanently coupled remote sensor nodes; a concentrator of signals from the plurality of permanently coupled remote sensor nodes; and a recorder of concentrated signals from the concentrator. A reservoir monitoring system comprising: a plurality of permanently coupled remote sensor nodes, wherein each node comprises a plurality of seismic sensors and a digitizer of analog signals; a concentrator of signals received from the plurality of permanently coupled remote sensor nodes; a plurality of remote transmission lines which independently connect each of the plurality of remote sensor nodes to the concentrator; a recorder of concentrated signals from the concentrator; and a transmission line which connects the concentrator to the recorder.

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 03/50871

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 G01V1/22

10/532647

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 G01V

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>US 6 459 654 B1 (GUION MICHEL ET AL)  1 October 2002 (2002-10-01)  column 2, line 37 - line 61  column 3, line 53 - column 4, line 13  column 5, line 11 - line 18  column 5, line 26 - line 53  column 5, line 58 - line 65  column 6, line 33 - line 36  column 6, line 56 - line 61  column 7, line 26 - line 32  figure 1</p> <p style="text-align: center;">--- -/-</p>	1,2,4, 6-12

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

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5 April 2004

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# INTERNATIONAL SEARCH REPORT

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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International Application No

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